

Notice of Allowability

Applicati n No.

10/099,641

Examiner

Lisa A Kilday

Applicant(s)

CATABAY ET AL.

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with th correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Appeals Brief on 2/26/04.
2. ☒ The allowed claim(s) is/are 15-19.
3. ☒ The drawings filed on 15 March 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachm nt(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Response to Arguments

Applicant's arguments see Appeal Brief pg. 12-21, filed 2/26/04, with respect to claims 15-19 have been fully considered and are persuasive. The rejection of claims 15-19 has been withdrawn.

Response to Amendment

The applicant's after-final amendment filed on 9/22/04 that was not entered previously has been entered necessitated by the allowable subject matter found in the after-final filed on 9/22/04.

Allowable Subject Matter

Claims 15-19 allowed.

The following is an examiner's statement of reasons for allowance: Shu et al. (6,348,421) teaches a composite layer in fig. 4a-4b of low k Silicon oxide dielectric material (see "SiOC") on an integrated circuit structure where said composite layer exhibits void-free deposition properties (col. 2, lines 18-30; col. 3, line 32-col. 4, 6) in high aspect ratio regions between metal lines (see "Metal") comprising: a first layer of low k Silicon oxide dielectric material exhibiting void-free deposition properties in high aspect ratio regions, deposited until said first layer completely fills the voids in (col. 3, lines 44-48) said high aspect ratio regions between said metal lines; and a second layer of low k silicon oxide dielectric material (see "SiO₂") deposited over said first layer (abstract; col. 2, lines 18-54; col. 3, lines 38-col. 4, line 15). Shu et al. does not explicitly teach that the composite layer is formed on an oxide layer, however Shu et al. teaches in col. 1, lines 34-36 the benefits of depositing a composite layer on an oxide layer when

it is part of an interconnect. While Shu teaches completely filling the voids, Shu et al. fails to disclose wherein the first layer of low k Silicon oxide dielectric material reaches the level of the top of metal lines in fig. 4B. In figure 4A, the low k Silicon oxide dielectric material is deposited, but there is a hole between the two Metal lines. In figure 4B, the dotted line that designates the top of the low k silicon oxide dielectric material does not reach the top of the Metal lines; it falls below the top of the metal lines. Prior art fails to teach or suggest a composite layer whose structure is characterized by filling the high aspect ratio regions between metal lines with a first layer of low k Silicon oxide dielectric material *completely* and *to the top* of the metal lines and wherein the first layer of low k silicon oxide dielectric material has the property of faster deposition rates in comparison to the second layer of low k silicon oxide dielectric material.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (571) 272-1962. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo,

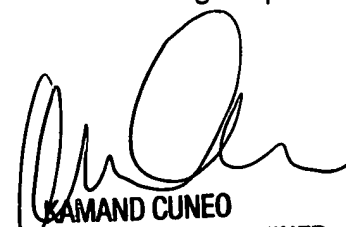
Art Unit: 2829

can be reached on (571) 272-1957. The fax number for the group is (703) 872-9306. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

4/28/04



KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800